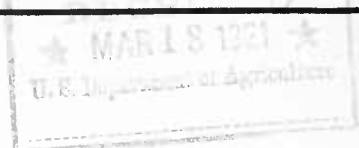


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UNITED STATES DEPARTMENT OF AGRICULTURE



FRESH VEGETABLES AND FRUITS AS CONSERVERS OF OTHER STAPLE FOODS



FRESH VEGETABLES AND FRUITS should never be wholly absent from the diet, and when they are comparatively abundant and cheap, as they are during the summer months in rural regions, they should be used in quantity. Even during the winter months and in cities they are more available than formerly because of improved methods of transportation. True economy suggests that whenever the consumption of these foods is increased a corresponding reduction be made in the amount of other foods used. The purpose of this bulletin is to show what foods fresh vegetables and fruits may safely replace in the diet.

In general the bulletin points out that peas, beans, and similar legumes would be the most useful as protein (meat) savers; potatoes, sweet potatoes, and similar vegetables as starch savers; and fruits and sweet potatoes as possible sugar savers, while all fruits and green and succulent vegetables are valuable to supply the diet with mineral substances and with certain very important substances commonly called vitamins. For this purpose special emphasis is laid in this bulletin on the economy of combining milk and its products with vegetables and fruits.

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FRESH VEGETABLES AND FRUITS AS CONSERVERS OF OTHER STAPLE FOODS.¹

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PLACE IN THE DIET.

FRESH vegetables and fruits, when abundant and cheap, can be so used as to save staple foods. Fresh beans and peas can, to a certain extent, take the place of meat, potatoes the place of bread, and fruit the place of sugar. When so used, however, these foods should be accompanied by other food materials that supply what they lack. Fortunately, milk (including skim milk), which supplements vegetables and fruits very well in some particulars, is likely to be available and cheap when they are abundant.

In considering how any kind of food can be most satisfactorily used, it is well to keep in mind the needs of the body. The diet as a whole should supply protein, fat, starch, sugar, fiber, mineral materials, and certain other substances needed for health and growth, called vitamins; it should be well flavored, too, and should come up to a certain standard in the matter of bulk.

In the average diet the vegetables and fruits supply practically no fat, little protein, and as compared with the cereals and sweets, only small amounts of starch and sugar. Even when used in moderate amounts, however, they are depended on to furnish a very considerable portion of all the mineral substances and vitamins needed. They furnish bulk, too, in a form that adds greatly to the attractiveness of the diet.

Fresh vegetables and fruits are, therefore, to be considered in two ways: (1) As parts of the ordinary diet in which they are needed to supply bulk, flavor, mineral substances, and vitamins; and (2) as the possible means, under exceptional circumstances, of furnishing

¹ Prepared under the direction of C. F. Langworthy, Chief, Office of Home Economics.

protein, considerable amounts of starch and sugar, thus saving meats, cereals, sugar, and other staple foods.

Under ordinary conditions, $1\frac{1}{4}$ pounds of fresh fruits and vegetables (the equivalent of an apple or an orange, two medium-sized potatoes, and an average-sized helping of some other vegetable) is probably all that even a grown person really needs in the course of a day. He may desire more because of their fine flavor or refreshing character, but the necessary health-promoting substances would probably be obtained from the amount mentioned. These supply only about a tenth of all the fuel and the protein needed, but a relatively large part of the mineral.

USES WHEN ABUNDANT.

When fresh vegetables and fruits are relatively abundant and cheap they may with advantage be used partly to replace cereals and sugar, and to a less extent meat. Under such circumstances it is the part of wisdom to examine the list of vegetables and fruits and to see which can be used in such a way as to save cereals or sugar, and which used in such a way as to save meat.

Fresh vegetables and fruits can be used in large quantities with little danger, provided they are carefully cleaned and handled. It is even safe to say that there is absolutely no danger from the vegetables and fruits themselves, the only real difficulty lying in the fact that, being bulky, they quickly satisfy the appetite, and sometimes lead people to leave out of their diet the more substantial foods—meats, cereals, etc.—which are needed either for fuel or for body-building purposes. This fact should always be kept in mind in finding uses for these bulky foods.

CLASSIFICATION.

Whenever vegetables and fruits can be used freely, it is well to think of all but the most succulent as divided into the following classes:

Meat savers.—Shelled green peas, shelled green beans (lima, kidney, etc.), shelled or green cowpeas (common in the South), shelled green soy beans (common in the South).

Cereal savers.—Potatoes, sweet potatoes, partially ripe bananas.

Sugar savers.—Sweet potatoes, all fruits.

USING SHELLED GREEN BEANS AND PEAS TO SAVE MEAT.

Beans and peas contain more protein than other fresh vegetables. This, however, is not the same as the proteins of meat, milk, or egg, and should not be used to the exclusion of them. When, however, beans and peas are freely used, less milk, meat, and eggs are needed.

For these reasons these vegetables are here called, not meat substitutes but meat savers.

Each of the following foods or combinations of foods furnishes as much protein as one-fourth pound of beef of average composition, and may occasionally be served in place of it:

(1) *Eight or nine ounces, or about two cups, of shelled beans or peas.* A large dish of peas is often served for dinner in place of meat. Some people like them cooked with mint or served with mint sauce.

(2) *One egg and four or five ounces, or about one cup, of shelled beans or peas.* These may be made into an omelet or into a baked soufflé. (See recipe on p. 10.)

(3) *One cup of skim milk and four ounces, or about one cup, of shelled green peas or beans.* These may be made into a chowder or substantial soup, a dish particularly suitable for school lunches. Lima beans are especially suitable for use in this way. (See recipe on p. 9.)

USING POTATOES TO SAVE CEREALS.

A small potato (3 to 4 ounces) supplies as much starch as a large slice of bread (1 ounce), but rather less protein. Potatoes eaten abundantly make it possible to get along with less bread. Potatoes can be substituted for about one-fourth of the wheat flour used in making ordinary bread and rolls. Recipes are given in another bulletin² of the department. These call, however, for old rather than new potatoes. Mashed potatoes may be used in place of biscuit crust in making meat pies. Mashed potato sliced and fried may be used in place of bread and butter and makes a good breakfast dish. A very large variety of attractive salads may be made by combining potatoes with other vegetables—peas, beans, beets, cucumbers, radishes, onions, etc. Cottage cheese and potato salad go well together. This cheese has always been made in small quantities in the home, and its commercial production has been so increased in recent years that it is now a more common article of trade than it has been in the past.

Sweet potatoes can be used in the same way as white potatoes. Partially ripe bananas supply considerable starch, though the amount can not be exactly stated, because as the fruit ripens the starch changes to sugar. Green bananas peeled and boiled can be used like mashed potatoes, or they may be baked or sliced raw and fried.

USING FRUITS TO SAVE SUGAR.

All ripe fruits contain sugar. The amount varies from about 3 ounces or one-fifth cup per pound in fresh figs and plums to about one-half ounce per pound in watermelon.

If the water is driven off from fruits, as in the drying process, the sugar becomes far more prominent than it is in fresh fruits. Dried

² Farmers' Bul. 807, Bread and Bread Making in the Home.

fruits therefore taste far sweeter than fresh ones, and are for this reason often classed among the sweets. It should be remembered, however, that sugar is present in all fresh fruits, even in the most acid ones, and that those persons who wish to do so can economize on other kinds of sugar by eating large amounts of fresh fruits in unsweetened forms.

In warm weather melons and other fruits may be used in place of "made" desserts, which usually contain both butter and sugar. Fruit and ice-cold junket, which can be prepared from skim milk, make a refreshing dessert and utilize perishable fruits chiefly. Or the dessert course may be omitted entirely and a fruit salad with cottage cheese may be used in its place.

A DAY'S FOOD MATERIALS.

The following list of foods, which was made up in war time, when it was particularly necessary to save cereals and other staple foods, provides a day's ration for three men or four women (about 11 ounces of protein and over 10,000 calories). It is suitable for those who can get large supplies of fresh fruits and vegetables. These foods supply over one-fifth of the protein and nearly a third of the calories, whereas in the amounts used in the ordinary mixed diet they seldom supply more than a tenth of either.

Cereals of various kinds (wheat flour, corn meal, etc.)	1½ pounds.
Beef of average composition	¾ pound.
Milk	2 quarts.
Eggs (4)	½ pound.
Potatoes	3 pounds.
Shelled green peas or beans	1½ pounds.
Other vegetables, including those served cooked and those used raw as salads	2 pounds.
Fruits (the equivalent of 6 quarts of strawberries, 12 large oranges, or 16 large apples)	6 pounds.
Fat (butter, butter substitute, lard, oil, and other fats), 1 cup	½ pound.
Sugar, 1 cup	½ pound.

These foods could be served as follows:

A DAY'S BILL OF FARE.

BREAKFAST.

Fruit, 2 quarts berries or 2 pounds of grapes, or the equivalent in any other fruit.
 Cereal, 4 ounces uncooked, equal to 2 cups of mush.
 Milk, 1 quart, or the richer half, or "top," of 2 quarts.
 Toast, 4 ounces, 6 medium-sized slices.
 Butter, 2 ounces, or 4 cubic inches.
 Sugar on cereal or fruit, or in coffee, tea, or cocoa, 2 ounces, or ¼ cup.

LUNCH OR SUPPER.

Eggs, 4.

Vegetable salad: Four potatoes, an equal amount of another vegetable (cucumbers, beets, string beans, peas, or any other), 2 ounces of oil, bacon fat, or other fat.

Crisp corn bread ($1\frac{1}{2}$ cups or 8 ounces of corn meal, $1\frac{1}{2}$ pints milk),³ or 12 ounces of ordinary bread.

Butter, fruit, and sugar as in breakfast.

DINNER.

Meat pie with mashed potato crust.

Peas, at least $\frac{1}{2}$ peck unshelled, or 20 ounces shelled.

Bread, 4 ounces, 6 medium-sized slices.

Fruit shortcake (2 pounds of fruit, $1\frac{1}{2}$ cups of flour, 2 to 4 tablespoons of fat, 1 cup of milk, $\frac{1}{2}$ cup of sugar).

Butter or other fat on bread or with vegetables, 4 to 6 level tablespoons, 2 to 3 ounces.

VEGETABLE RECIPES.

It should be remembered that the simplest way to serve vegetables is also a good way, i. e., to boil, steam, or bake them and to serve them either with salt only or with a little butter, milk, or cream. However, when large amounts of vegetables are to be introduced into the diet, it is convenient and desirable to know a variety of ways in which to prepare them. For this reason the following recipes are given.

VEGETABLE SOUPS.

Good vegetable soups may be made by finely chopping any vegetable or combination of vegetables and cooking in water with a little rice or farina for thickening. The chopping is most conveniently done with a food grinder. The following recipe calls for a combination of vegetables, which is only one out of many which can be used. Left-over vegetables can be used in soups of this kind.

VEGETABLE SOUP.

2 turnips.	6 tomatoes or 1 pint can of tomatoes.
2 potatoes.	2 sprigs parsley.
1 onion.	$1\frac{1}{2}$ teaspoons salt.
6 stalks celery with tips.	$\frac{1}{4}$ teaspoon pepper.
2 carrots.	2 tablespoons rice.
1 quart water.	

Wash and pare the vegetables and put them through the meat chopper, using the finest blade. Combine all the ingredients and cook until the vegetables and rice are soft.

The water in which rice has been cooked may be used in preparing this dish instead of rice itself.

MILK-VEGETABLE SOUPS.

These soups offer a good way in which to utilize vegetables and also skim milk which is often thrown away.

³ For recipe see Farmers' Bul. 565, Corn Meal as a Food and Ways of Using It.

MILK-VEGETABLE SOUP, METHOD No. 1.

The soup for which the recipe is given above can be made with milk, provided no acid vegetables are used. This has the advantage over some other ways of making milk-vegetable soups of preserving all of the juices of the vegetables. Under these circumstances the vegetables should be very finely chopped and cooked in a little water until tender before the milk is added; or, if milk only is used, the cooking should be done in a double boiler.

MILK-VEGETABLE SOUP, METHOD No. 2.

Milk-vegetable soups may be thickened with flour. The general proportions are as follows:

Ingredients.—Liquid, 1 cup. This may be milk (whole or skim), vegetable pulp, or the water in which vegetables have been cooked.

Fat, $\frac{1}{2}$ tablespoon or less. This may be butter, butter substitute, or drippings. The fat from bacon or salt pork gives a particularly good flavor.

Flour, $\frac{1}{2}$ tablespoon.

Method of preparing.—Melt the butter, add the flour, and cook one or two minutes, being careful not to brown. Add the liquid and stir until the mixture thickens. Season with salt and pepper.

The following is a typical recipe:

STRING-BEAN SOUP.

2 quarts string beans.
 $\frac{1}{4}$ cup flour.
 $\frac{1}{2}$ cup or less of fat.
 1 small slice of onion.

Salt.
Pepper.
Milk, whole or skim, enough to make
2 quarts of soup.

Cook the beans until tender in as little water as possible, drain, and rub through a sieve. Add the bean liquor and milk enough to make 2 quarts. Melt the butter, add the flour, and cook carefully for one or two minutes. Add the liquid and cook until the mixture thickens. Season with salt and pepper.

Part of the beans can be cut into small pieces and served in the soup, if desired. The addition of large amounts of such pieces and of sliced potatoes converts the soup into a chowder.

MILK-VEGETABLE SOUP, METHOD No. 3.

Soups can be thickened with stale bread, which makes it possible to utilize still another food sometimes thrown away. Half a small slice of bread or about one-fourth ounce of bread is enough to thicken 1 cupful of soup. The following is a typical recipe.

LETTUCE SOUP.

1 head lettuce, or the equivalent in the outer leaves of lettuce.	1 large slice stale bread.
1 small slice onion.	Butter or other fat, if desired.
2 quarts skim milk.	Salt and pepper.

Put the lettuce and onion through the meat chopper with the bread to save the juice. Put into a double boiler with the skim milk and cook until the lettuce is soft. Add fat (if desired) and the salt and pepper.

VEGETABLE CHOWDERS.

Vegetable chowders offer another good way of using vegetables and also skim milk. They differ little from milk-vegetable soups made according to Method No. 1, except that less liquid is used and vegetables are usually cut into small pieces instead of being chopped finely. For this reason chowders seem more substantial. As in the case of the vegetable soups, it is a mistake to be confined to any definite recipe, for under these circumstances materials are often wasted which should be used. The following typical recipes are therefore only suggestive.

MIXED-VEGETABLE CHOWDER.

$\frac{1}{4}$ pound salt pork or bacon.	4 medium-sized potatoes.
1 onion.	3 carrots.
6 medium-sized tomatoes or 1 pint stewed tomatoes.	2 cups skim milk.
1 green pepper.	2 tablespoons flour.
	2 teaspoons salt.

Put the bacon or pork, onion, and pepper through the meat chopper and cook carefully for about five minutes. Add the water and tomatoes and cook until the vegetables are tender. Cut the potatoes and carrots into small pieces and cook in water until tender, drain, and add with the skim milk to the other ingredients. Thicken with the flour mixed with a little cold milk.

LIMA-BEAN CHOWDER.

$\frac{1}{4}$ pound salt pork.	1 pint or $\frac{1}{2}$ pound green shelled lima beans.
1 onion.	4 small potatoes.
1 green pepper.	Salt and pepper.
3 cups skim milk.	

Put the pork, onions, and pepper through the grinder. Cook carefully for 2 or 3 minutes, being careful not to burn. Add either the beans or the potatoes with water enough to cover and cook until the vegetables are soft. Cook the other vegetable separately and when soft add with the milk to the other mixture. Reheat and season.

The protein in the above dish is equal to that in about three-fourths pound of beef of average composition.

Any vegetable may be used in place of the beans. Corn and salsify are perhaps oftenest so used.

VEGETABLE SOUFFLÉS OR BAKED OMELETS.

These dishes are a good way to combine eggs and vegetables. If made with the green shelled legumes (peas, beans, soy beans, or cow-peas), they may be considered meat savers.

GENERAL RECIPE.

- (1) A thick sauce made with $\frac{1}{4}$ cup fat, $\frac{1}{4}$ cup flour, and 1 cup liquid which may be milk (whole or skim), cream, meat stock, or the water in which vegetables have been cooked.
- (2) 1 cup thick vegetable pulp made by draining cooked vegetables and then mashing them or putting them through a sieve.
- (3) 3 eggs, the white and yolks beaten separately.
- (4) Flavoring. Salt, pepper, onion juice, and any one of the following may be used: Very finely chopped parsley, chives, or ham, or $\frac{1}{8}$ teaspoon curry powder. Bacon used in making the sauce gives a good flavor.

Mix the vegetable pulp, seasoning, sauce, and well-beaten egg yolks. Carefully fold in the well-beaten whites of the eggs, put into a buttered baking dish, and bake in a slow oven until firm.

The amount of vegetables in this dish may be increased by serving vegetables around the soufflé.

The following is a typical recipe in which the protein is equivalent in amount to that in 10 or 11 ounces of average beef.

GREEN-PEA SOUFFLÉ.

$\frac{1}{4}$ cup fat.	Salt.
$\frac{1}{4}$ cup flour.	Pepper.
1 cup skim milk.	A few drops onion juice, or a very
1 cup mashed cooked peas (which will	small piece of onion boiled with the
require about $\frac{1}{4}$ peck peas).	peas.
3 eggs.	

Combine the ingredients as directed above.

Directions for preparing vegetables in other ways and also for preparing vegetables not mentioned above can be found in other Farmers' Bulletins of the department.⁴

⁴ Farmers' Bul. 256, Preparation of Vegetables for the Table. Farmers' Bul. 712, School Lunches.

